

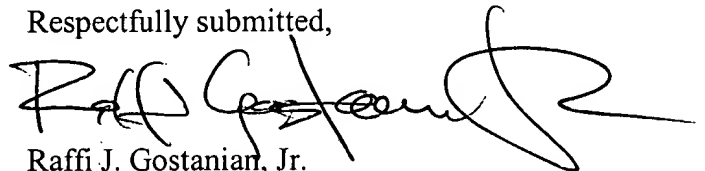
## REMARKS

Attached hereto is a marked-up version of the changes made to the specification and the claims by the current amendment. The attached page is captioned **"VERSION WITH MARKINGS TO SHOW CHANGES MADE."**

Enclosed is a check in the amount of \$240.00 to cover the additional claims (4 new claims x 18.00 = \$72.00) plus (2 independent claims - only 1 independent claim was initially filed - X \$84.00 = \$168.00). The Assistant Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-1752.

A prompt examination and allowance is respectfully solicited. If there are any additional questions, please contact me at your earliest convenience.

Respectfully submitted,



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## VERSION WITH MARKINGS TO SHOW CHANGES MADE

### **In the Specification:**

#### **(1.) The following changes were made to paragraph 10, page 3:**

[0010] One embodiment of the system comprises the base control module assembly, a daylight vision assembly, a night vision assembly, a laser rangefinder, and a military GPS receiver. The daylight and night vision configurations may be operated stand alone, or may be operated in conjunction with the PhotoTelesis MMR (Military Micro RIT (Remote Image Transceiver). Various Military Radios may be utilized for image and collateral data transmission. A remote base station can be incorporated having a remote, possibly laptop, computer with appropriate Government protocol and/or commercial communications card and an image frame capture card, a printer, and a power inverter to operate the system on 24 VDC military power. The control module is adapted for transmitting all captured data to the base station via a wireless communications link or via plug-in cabling for archiving and managing the data, or may be operated in conjunction with the PhotoTelesis MMR providing communications and processing functions. Additional modules include a high performance day vision system; an uncooled FLIR (Forward Looking Infrared sensor); cooled FLIR; RF probe; NBC detector; sensor computer modules; a laser rangefinder unit and the like. The system has full modularity and various components can be connected as desired, with virtually no limitation in the functionality.

#### **(2.) The following changes were made to paragraph 38 page 9:**

[0038] An exploded view of the modular system of the subject invention is shown in Fig. 1. The base module 10 includes the electronics disposed within the base module,[inside;] controls 12 and a power supply [14] for all of the components of the system. In this embodiment, the module includes a standard connector (not visible) for cabling the module to a management unit such as, by way of example, the PhotoTelesis MMR 15. The MMR unit includes standard connectors 16, 18, and 20 for a communications link 22, an input device such as the keyboard 24 and a breakout box 26, respectively. The communications device in the preferred embodiment is a PSC-5 with a Sincgars radio. It should be understood that other communications links such as cellular telephone, secure telephone, satellite transmission, an Internet gateway or others g could be substituted without

departing from the scope and spirit of the invention. The input device is shown as a ruggedized keyboard. Other input devices can be readily substituted. The breakout device 26 is adapted for further increasing the flexibility of the system by permitting the attachment of additional modules such as, by way of example, the PLGR unit 28 and the MELIOS unit 30.

**(3.) The following changes were made to paragraph 39, page 9:**

[0039] The base module 10 includes a mounting rail system 32, as better seen in Figs. 2 and 6. The mounting rail system defines a channel or slide for receiving the compatible connector rail 34 provided on each of the various sensor units, [as here shown] including the high performance day module 36, the laser range finder 38, the high performance night module 40, the uncooled FLIR module 42, the FLIR module 44, the RF probe module 46, and the NBC detector 48.

**(4.) The following changes were made to paragraph 41, page 9:**

[0041] A common connector plug assembly 54 is provided on each of the component modules and is received in a mated receptacle 56 (depicted in Fig. 5) on the base 10 as the component is received in the slide and locked in mounted position. This connects the module with the power supply, controls and system electronics. The receptacle 56 may also be used for connecting various connector cables to standard video or other devices, such as the monochrome RS-170 cable 58, the switcher cable 60 and the color RS-170 cable 74, each of which is provided with the compatible plug 54.

**(5.) The following changes were made to paragraph 42, pages 9-10:**

[0042] The system shown in Fig. 2 is similar to that shown in Fig. 1, the base module 10 and the MMR module 15 and keyboard 22 have[having]been replaced by a handheld military sensor computer 62 having a hinged keyboard input device 64 and a display panel or screen 66. The communications link 22 is attached directly to the computer by cabling, as previously described. The various components are mounted on the slide 32, as before, with the locking system and connector plug assembly provided on the computer base in the same manner as the base unit of Fig. 1.

**(6.) The following changes were made to paragraph 48, page 10:**

[0048] Fig. 6 shows [the] a graphic of the relationship of the elements of an image intensifier module for the base unit. The left vertical axis, as drawn, is light intensity. The horizontal axis is gain. Starting on the left, we show a scene to be imaged. The lens contains a motorized iris that can be utilized to mechanically control the amount of light that is projected on the input side of the image intensifier tube. The iris ideally is [at] stepped down to various partial open positions [under] under bright conditions and opened up under low light conditions, thus providing a more uniform illumination level to the intensifier tube under varying light levels.

**(7.) The following changes were made to paragraph 49, pages 14-15:**

[0049] The image intensifier is a gated type of tube with an[d] external gain input control. This control in prior art systems is a simple variable resistor that is adjusted by the user while viewing the output of the tube. In the system of the preferred embodiment it is controlled by a circuit element that is interfaced to the control processor 86 of the base unit (see Fig. 5). Therefore, the gain of the tube can be adjusted under computer control.[ ] The relay lens then images the light coming from the output side of the image intensifier to a solid state camera such as, by way of example, a CMOS camera or CCD camera. The camera has a gross light level adjustment that is called the shutter. This is an electronic mechanism that gates the active area of the CMOS or CCD sensor for a specific amount of time, thus letting photons discharge wells or electrically controlled gates in the solid state array. The longer the time that is metered to the imager chip for exposure, such as 1/30 of a second, the more sensitive the imager will be to the light. The shorter time that the light is metered to the chip, such as 1/2000 or 1/10000 of a second, the less sensitive that the camera will be to the light, thus controlling the camera gain.

**(8.) The following changes were made to paragraph 53, page 15-16:**

[0053] Fig. 8 illustrates a more flexible method wherein all programmable elements of the system may be adjusted in any desired manner for each step in gain setting. In this method, one or more of the programmable elements can be adjusted for each and every step increase in gain. The individual elements can be adjusted in an either linear or non-linear manner, and can be calculated by mathematical functions in software or by look-up-tables. With specific reference to Fig. 8, the

scene is shown as the individual designated by the reference numeral 126. This is picked up by the image intensifier tube 128 and directed through the lens assembly 130. The intensifier tube includes an irised lens 133 controlled by the gain module 132. The lens assembly 130 is focused on the solid state camera chip 134. A timebase module 136 controls the shutter speed. The image output from the camera chip is introduced into an analog camera 138 from there to a filter system 140. It is then converted to a digital signal at converter 142 and modified by the look-up tables 144, after which it is introduced into the frame integrator 146. The output of the frame integrator is distributed to an analog output line through the converter [148]150, a digital line out 152, and various other components such as the viewfinder 154.

**(9.) The following changes were made to paragraph 59, page 18:**

[0059] The frame averager incorporates bypass mode whereby the incoming video can be routed to the output without averaging. This is accomplished by setting a bypass command into control register 535 utilizing data bus 536 and write strobe [535]539. This sets the signal on wires [573]537 to allow unprocessed video data 506 to be selected by multiplexer 507 input B to be presented to the D/A converter on the video encoder chip 509 to produce the unprocessed video at video output 550.

**(10.) The following changes were made to paragraph 61, page 19:**

[0061] The frame average is first initialized by zeroing memory 522. The state machine 524 first selects input A on multiplexer 520, which is a zero value. This presents data of zero value to the din on memory 522. The frame counter 532 and pixel [v]counter 560 are reset by a pulse on 530. The memory then is written with a strobe on "Write" via wire 531, then the [m] pixel address is incremented to the next location with a pulse on 561. The process of writing is repeated until the appropriate number of memory locations for one full frame have been zeroed. Then the frame counter 532 is incremented by a pulse on 529, and the above process of writing all pixels in a frame is repeated. This continues until all frames as is specified by register 538 have been zeroed. This leaves all necessary memory locations set at zero. The accumulator 513 is reset by signal 530 from the state machine. The state machine 524 can then exit the initialization process.

**(11.) The following changes were made to paragraph 67, page 20:**

[0067] A historical copy of all of the pixel data[e] from the last N frames that have been averaged is stored in memory 522. The sum for each pixel in memory 515 is updated by selecting the raw pixel data for the oldest frame in the memory, subtracting it from the previous sum in accumulator memory 515 then adding in new pixel data [form]from bus 510. This is accomplished by setting the multiplexer 511 to input B by using signal 525, setting the adder 513 to subtract by using signal 526, then capturing the result by clocking memory 515 with a clock on 527. The multiplexer 511 is then set to input A allowing the newest incoming pixel data 510 to be summed into the average by setting the adder 513 to add utilizing wire 514, then clocking the memory 515 to capture the new sum. This sum is then barrel shifted using barrel shifter 517 to do the divide, and presented to the video encoder via bus 518 and multiplexer 507. The averaged video data is then available on video output 550. This process is repeated for each pixel in the frame, with the pixel counter 560 being incremented by the state machine 524 for each pixel clock. After the average has been processed for one frame, the state machine increments the frame counter 532 via signal 529, or resets it via signal 530 if the total number of frames to be integrated has been met.

**(12.) The following changes were made to paragraph 68, pages 20-21:**

[0068] It can be seen that the accumulator memory 515 can be implemented within [in] memory 522 to conserve hardware, but the accuracy of the accumulator is greater than the historical data so the memory either has to be made wider in word width, or two memory cycles are required. In addition, moving the accumulator into the memory 522 places an additional bandwidth burden on the memory, thus causing it to have to be an extremely expensive fast part and causing it to consume more power. In the preferred embodiment [it was found that] maintaining separate memory for the accumulator and the historical memory is preferable.

**In the Claims:**

**Claims 57-60, which contain no new matter, are added:**

57. (new) A hand-held surveillance system, comprising:  
a mounting rail; and

a connector;

wherein the mounting rail and the connector are adapted to couple a plurality of sensor units selected from a group consisting of:

- a high performance day module;
- a high performance night module;
- a laser range finder;
- a forward looking infrared module;
- a radio frequency probe module; and
- a nuclear, biological, and chemical detector.

58. (new) A hand-held surveillance system, comprising:

a mounting rail;

a connector;

wherein the mounting rail and the connector are adapted to couple a plurality of sensor units, each comprising a plug, the units selected from a group consisting of:

- a high performance day module;
- a high performance night module;
- a laser range finder;
- a forward looking infrared module;
- a radio frequency probe module; and
- a nuclear, biological, and chemical detector;

a data input device; and

a display adapted to display data from the input device and data from the plurality of sensor units.

59. (new) A hand-held surveillance system, comprising:

a mounting rail;

a connector; and

a receptacle;

wherein the mounting rail and the connector are adapted to couple a plurality of sensor units, each comprising a plug, the units selected from a group consisting of:

- a high performance day module;

- a high performance night module;
- a laser range finder;
- a forward looking infrared module;
- a radio frequency probe module; and
- a nuclear, biological, and chemical detector; and

wherein the plug is adapted to mate to the receptacle which further couples each 6  
the sensor units.

60. (new) A hand-held surveillance system, comprising:

- a mounting rail;
- a connector;
- a receptacle;

wherein the mounting rail and the connector are adapted to couple a plurality of  
sensor units, each comprising a plug;

wherein the plug is adapted to mate to the receptacle which further couples each 6  
the sensor units;

- a data input device;

a display adapted to display data from the input device and data from the plurality  
of sensor units;

- an electrical interface in the system; and

- an electrical interface in each of the sensor units;

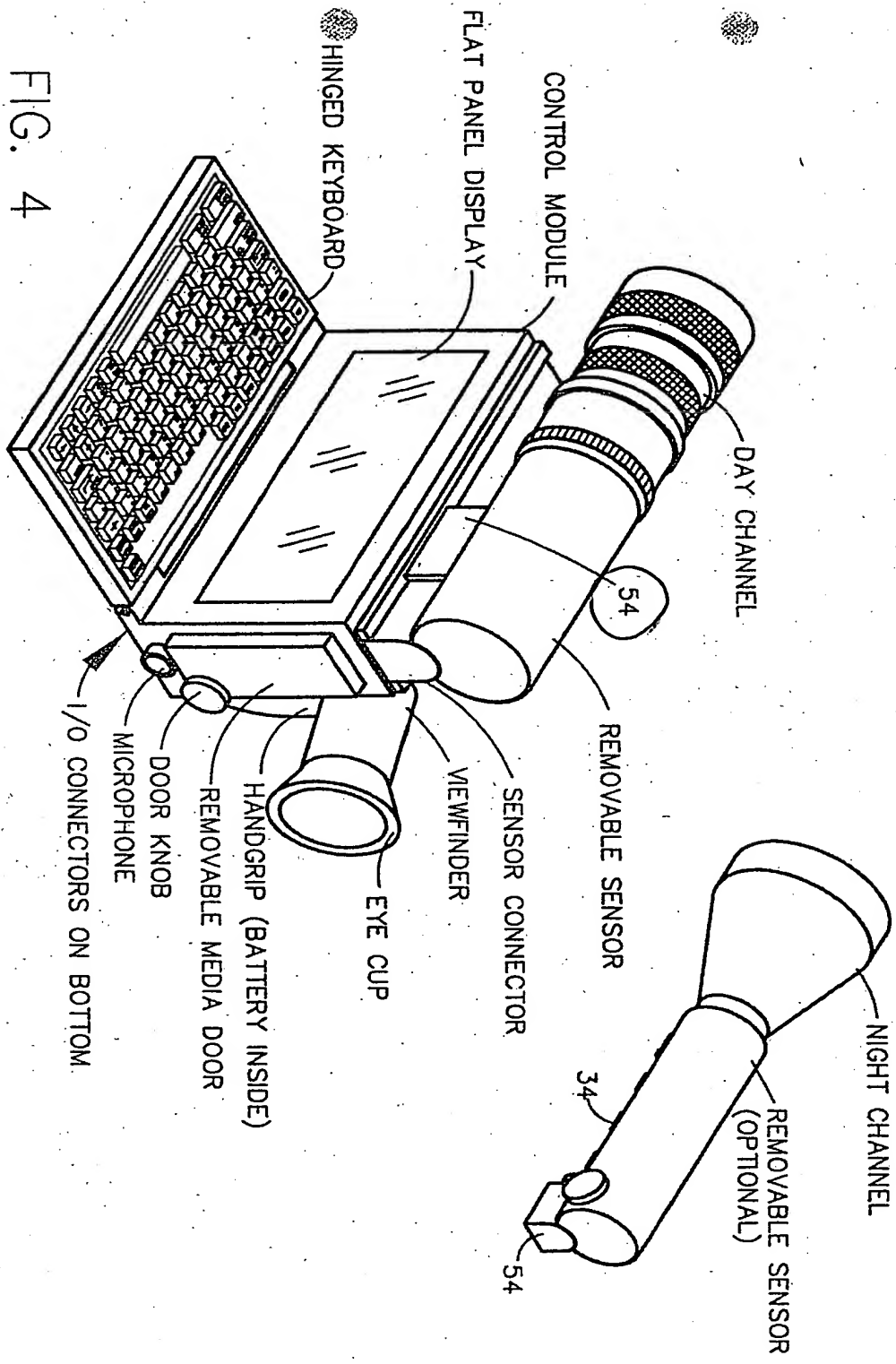
wherein the electrical interfaces are adapted to couple to one another when at least  
one of a following occurs:

- the mounting rail and the connector are coupled to the sensor units; and
- the plug is mated to the receptacle.



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FIG. 4



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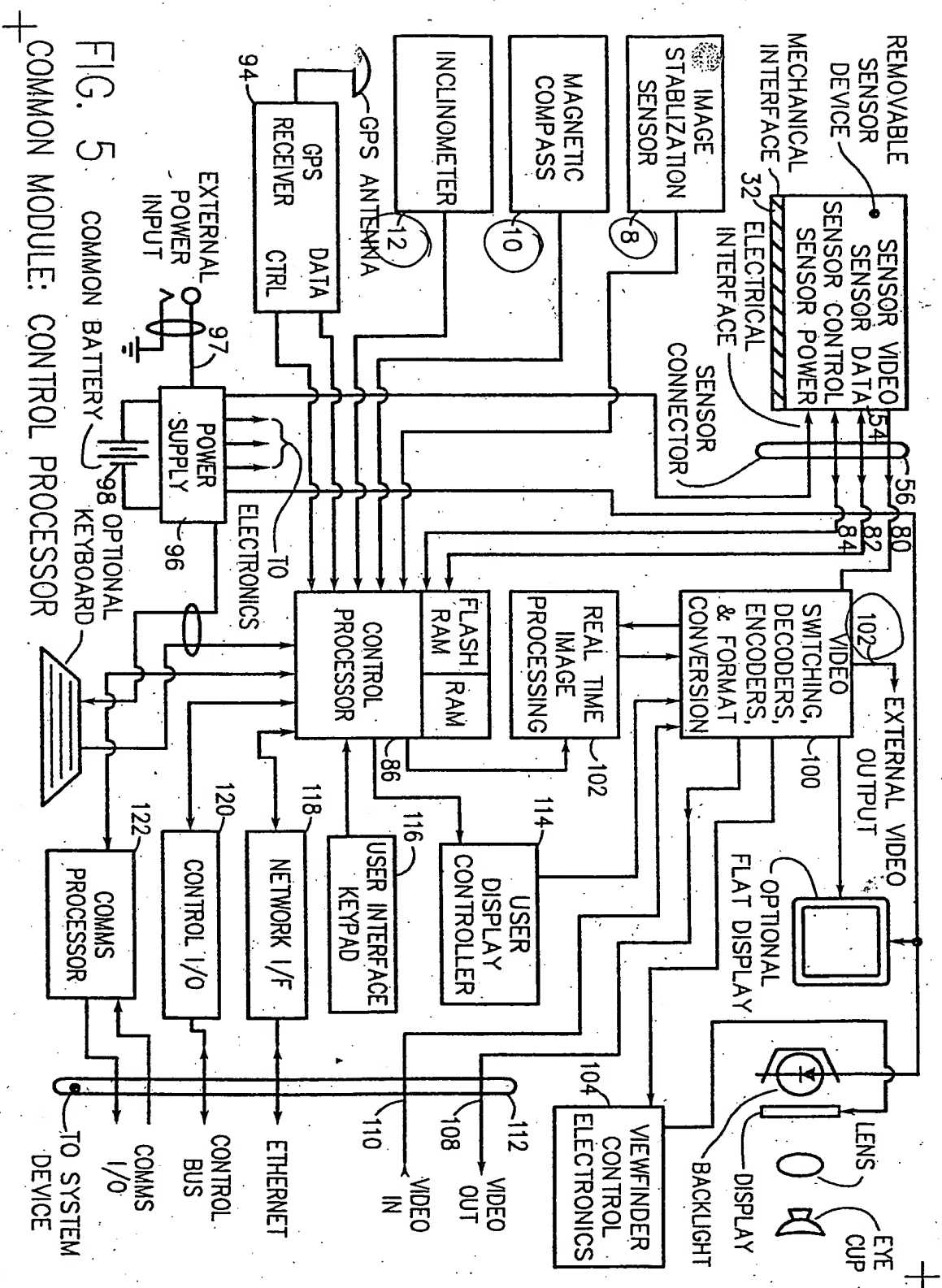


FIG. 5 COMMON BATTERY

+ COMMON MODULE: CONTROL PROCESSOR